

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MISSOURI
EASTERN DIVISION**

UNITED STATES OF AMERICA,

Plaintiff,

V.

AMEREN MISSOURI,

Defendant.

Case No. 4:11-CV-00077-RWS

Judge Rodney W. Sippel

AMEREN MISSOURI'S TRIAL BRIEF

Ameren Missouri respectfully submits its trial brief. Below, we provide a summary of Ameren’s defense and the evidence it will present at trial. We then highlight three key evidentiary issues.

Ameren's Defense

Ameren will demonstrate that it believed that the Projects at issue would not increase emissions and that its belief was objectively reasonable. The Projects consisted of like-kind replacements. The new components were functionally equivalent to — and had the same thermal performance as — those that they replaced. The new components did not increase the size of the boilers, did not increase the rate of fuel burned, and did not enable the units to burn more fuel than before. When they made their assessment, Ameren’s engineers considered all relevant information, and concluded that the projects would not increase the generation of electricity.

Ameren's emissions analysis for the 2010 Outage confirms that its beliefs were reasonable. The evidence at trial will show that none — not *one* ton — of the emissions that Ameren projected to occur following the 2010 Outage was due to the Projects that took place

during that Outage. To be sure, Ameren projected an increase after the Outage, but that is entirely natural in the electric generating industry. Emissions and generation fluctuate considerably from month to month and year to year. As Ameren well knew from the various parts of the company dedicated to forecasting future market demand, the market for electricity was growing every year; and Ameren projected increased generation at Rush Island because of this increased market demand. In its emissions calculation, Ameren properly excluded increased generation (and the accompanying emissions) due to increased market demand. Ameren did so under the EPA regulation that specifically *requires* excluding emissions caused by extrinsic factors, like market demand growth. The reasonableness of Ameren's calculation is shown by the fact that when EPA trained state air quality regulators, it trained them to do the calculations the same way that Ameren did them. Indeed, EPA specifically approved calculations that used the same method. EPA cannot plausibly claim that its own approved methods are unreasonable.

EPA's litigation theory is that the Rush Island units were on their last legs and that Ameren had to spend tens of millions of dollars to restore them, with the result that the units could generate more and emit more. That story simply couldn't be further from the truth. Ameren invests heavily in the maintenance and upkeep of its units, and does so on a proactive basis, to keep its units in excellent condition, to honor its obligations to Missouri ratepayers. Ameren's decades of experience with coal-fired power plants has informed its maintenance approach. The components of its boilers and turbines operate in extremely stressful environments, and Ameren knows that these components will eventually fail. Ameren doesn't wait to let the components fail; its maintenance philosophy heads it off, replacing components *before* they begin to fail frequently. The result of Ameren's approach was that the Rush Island units were in excellent condition before any of these projects were performed. Indeed, these

units had already reached levels of performance before these Projects that were well above most units in the industry. EPA's theory sounds plausible on paper, but the facts are quite to the contrary, as the evidence at trial will show.

Coal-fired electric generating units are complex machines, comprising thousands of parts operating under extremely harsh conditions — high temperatures, high pressures, high stress. Replacing three or four of those thousand-plus critical components does *not* mean that the unit as a whole would improve. For that to happen, *every* other component's rate of failure would have to have remained perfectly constant. That is because failures in any of the other components would reduce the unit's availability below pre-project levels. Power plants simply do not operate in the artificial construct created by EPA's experts, and Ameren was reasonable to have its expectations shaped by operating principles that it had seen repeated time and time again for decades in the real world, rather than litigation theories. Ameren's engineers' reasonable projections, along with actual events, show that EPA's litigation theories are just that: theories.

In fact, other projects performed on the Rush Island units at the same time as the Projects at issue — projects that EPA does not challenge — substantially improved efficiency, which increased the unit's ability to produce *more* electricity while burning *less* fuel. Ameren will show that it reasonably expected these other projects to reduce emissions.

Moreover, assuming *arguendo* that EPA satisfies its burden during its case in chief, Ameren has powerful affirmative defenses (the demand growth and routine maintenance defenses), either of which is independently sufficient to defeat EPA's claims.

Ameren will show at trial that it expected substantial growth in the market's demand for electricity. The electricity market is essentially a perfect market, because the amount of electricity generated exactly equals the amount demanded. No electricity is stored. Indeed, this

perfect, real-time matching of supply and demand is a necessity: if demand exceeds supply, power outages could occur; if supply exceeds demand, malfunctions of end-users' electronics could occur. That is why the system must be in balance at all times. While years ago, utilities like Ameren used to perform this balancing function, now the system is kept in balance by a system operator.

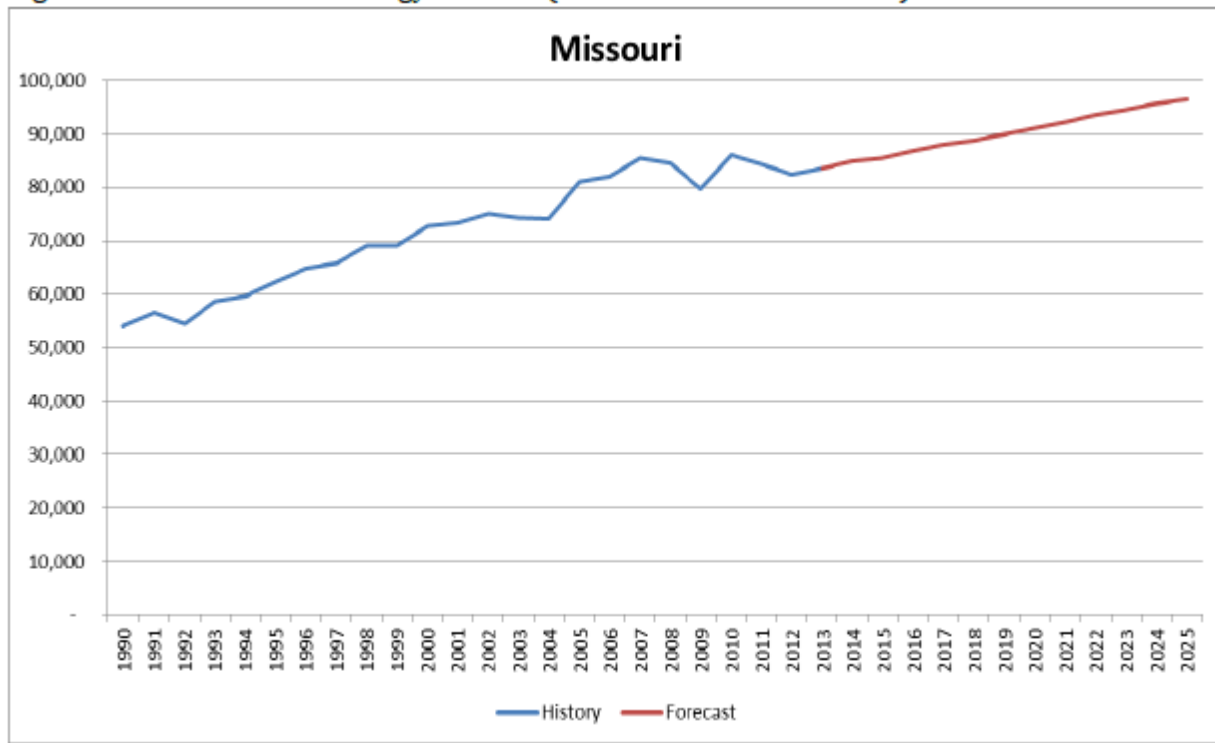
Ameren's system operator is the Midwest Independent System Operator, or MISO. As the Eighth Circuit recently explained, "once a utility [makes] the decision to surrender operational control of its transmission facilities to [MISO], any transmissions across those facilities [are] subject to the control of [MISO].... MISO — not individual generators — controls which generation facilities operate at any given time." *State of North Dakota v. Heydinger*, No. 14-2156, 14-2251, 2016 WL 3343639 (8th Cir. June 15, 2016).¹ As a generator, Ameren — and each of its units (including Rush Island) — is reactive. The units generate electricity only when MISO calls upon them to generate, and they generate the *exact* amount of electricity that MISO calls upon them to generate. Ameren has no control over when or how much electricity Rush Island generates. MISO, not Ameren, decided which of its units run and at what level. And none of MISO's generation demands, of course, are driven by the occurrence of construction projects at Rush Island. MISO (and the expansive geographic market it serves) neither knows nor cares that, for example, Rush Island's economizer has been replaced.

The evidence at trial will show that it is the market — i.e., MISO — that drives the generation of these units, not the minute changes in availability alleged by EPA (even if one believed, incorrectly, that the Projects should have been expected to cause such improvements).

¹ In *Heydinger*, the Eighth Circuit described the growth of the electricity market as a result of changes in the law and the introduction of an independent system operator. *Id.* at 3-4.

At summary judgment, for example, EPA made much of the fact that Rush Island Unit 2 experienced its all-time maximum generation in 2010 and 2011. But that is hardly a surprise; so did the rest of the market. The Missouri market peaked once in 2006-2007 (Unit 2's period of highest generation before the Projects) and then reached its all-time high in 2010-2011 (Unit 2's period of highest generation after the Projects). It is no coincidence that, as the market goes, so goes Rush Island. Rush Island generates the most when MISO calls for it to generate the most.

Figure 14: Gross Missouri Energy Forecast (Annual Retail Sales in GWh)



Ameren Trial Ex. HV (blue portion is actual sales of electricity; red portion is a forecast.)

The Relevant Legal Standard

Crucially, under the “reasonableness” standard upon which liability in this case turns, Ameren’s conclusions need not have been correct (though they absolutely were) — they need only have been reasonable. ECF #724; *see United States v. Cinergy Corp.*, 458 F. 3d 705, 709 (7th Cir. 2006) (“[W]hat is required for determining whether a construction permit must be

sought for a planned physical change in the plant is not prescience, but merely a reasonable estimate of the amount of additional emissions that the change will cause...”); *see also United States v. DTE Energy Company*, 711 F. 3d 643, 649 (6th Cir. 2013).

That standard is objective. EPA cannot prevail merely by showing that its own litigation experts’ views are reasonable. Nor will it be enough for EPA to show that Ameren *could have* considered relevant information concerning the projects in the way that those paid experts did. EPA instead has to show that Ameren’s own conclusions concerning the projects’ anticipated effect on emissions were unreasonable and that the only reasonable conclusion is that the projects would increase emissions.

Accordingly, Ameren will prevail if *any* of the following occurs:

- EPA fails to demonstrate that Ameren’s expectations were objectively unreasonable; or
- The Court finds that Ameren’s expectations were objectively reasonable; or
- EPA fails to demonstrate that its experts’ views are objectively reasonable.

Key Questions for the Court at Trial

Accordingly, the trial raises four broad questions:

- Was Ameren’s expectation that the projects would not cause a significant increase in emissions unreasonable? No.
- Did the challenged projects in fact cause an emissions increase? No.
- Can any emissions increase be attributed to a growth in market demand and other factors unrelated to these Projects? Yes.
- Was the challenged work Routine Maintenance, Repair, and Replacement? Yes.

As for causation, EPA will be unable to link the projects causally to emissions increases.

The NSR regulations require a very specific comparison in order to determine causation. Under the correct comparison, there is no causal link.

Anticipated Key Evidentiary Issues

1. EPA's Experts Lack Foundation to Interpret Ameren's Documents.

EPA should not be permitted to base its case on its mischaracterization of Ameren's documents. EPA will likely take two approaches in misusing Ameren's documents: (i) have its experts testify about what Ameren's employees meant when they wrote certain documents; and (ii) have its experts use for their emissions calculations documents that were not intended to be used, and were not actually used, for that purpose. These kinds of documents include, for example, economic analyses and budgeting documents. Neither tactic is appropriate under the rules of evidence. Ameren's personnel — the authors and users of its documents — are the only witnesses who have the foundation to testify to what those documents mean.

The Court has already ruled that EPA's witnesses cannot testify to what Ameren's own state of mind was — i.e., what Ameren expected.

State of mind is out.

Look, there will be nothing that will destroy a witness quicker than if they try to show me a document and tell me it says something it doesn't say; so understand. Misstating the contents of a document, using it for a purpose for what it wasn't intended as showing data about one thing you tried to extrapolate into something else, nothing with sink an expert witness quicker than trying to put that round – that square peg into a round hole and tell me it's something it's not.

ECF #706 at 143:8-17. But it appears that EPA will nonetheless have its experts try to testify to their personal interpretation of Ameren's documents, because EPA's witness list says that it does not plan to call *any* Ameren witnesses.

2. EPA Has No Proper Evidence for its Increased Capacity Claim.

To determine whether an emissions increase should be expected, the New Source Review regulations require a comparison between two specific periods of time. The 24-month baseline

period before the project is compared to the 12-month period of highest projected emissions after the project.

One of EPA's two emissions theories is that the generating capacity of the Rush Island units increased (and should have been expected to increase) because of the Projects at issue. EPA's evidence regarding increased capacity comes solely from its experts. The evidentiary problem is that none of EPA's experts disclosed any opinions regarding the Rush Island units' actual capability during the 24-month baseline period. Since they do not say what the pre-project capability was, they cannot say that there was an increase. It's obvious that you have to know both of the values you are comparing before you can make a valid comparison between them. To know if 640 megawatts is more or less than X megawatts, you have to know what X is.

Mr. Koppe, for example, cherry-picked portions of the baseline periods where capacity was lower; then cherry-picked portions of the post-project periods where capacity was higher. In other analyses, he picked data that was not even part of the baselines at issue. This was in stark contrast to Mr. Koppe's and Dr. Sahu's analyses with respect to EPA's increased availability theory. There, they calculated availability impacts for every single one of the possible 24-month baseline periods (there are 37). And each time, Mr. Koppe and Dr. Sahu derived the availability effects from the *entirety* of the 24-month baseline period. Those analyses and conclusions are flawed for other reasons, but at least they adhered to the requirement to examine the entire baseline period. For their capacity opinions, however, EPA's experts ignored the baseline periods entirely:

EPA's Evidence	Pre-Outage period covered:	Correct baseline?
Mr. Koppe's analysis of Unit 1 PI Data	1/2006 to 2/2007	No
Mr. Koppe's analysis of Unit 2 PI Data	1/2006 to 12/2007	No
Unit 1 Full load tests	5/2006 to 1/2007	No
Dr. Hausman's Unit 1 analysis	Calendar 2006	No
Dr. Hausman's Unit 2 analysis	Calendar 2009	No

EPA's Evidence	Pre-Outage period covered:	Correct baseline?
EPA's analysis of CEMS Data	60 month periods	No
Unit 1 Capability Tables	Calendar 2006	No
Unit 2 Capability Tables	Calendar 2009	No

3. EPA's Experts Double Count its Emissions Increases

EPA's emissions theories overlap considerably and as a result, EPA's experts improperly double-count emissions. This is a second reason why, independent from the lack of valid baseline evidence noted above, there is no evidentiary basis for EPA's "increased capacity" claim.

Before their replacement, the Rush Island units' economizer and air preheater components had become plugged with ash. This is a common problem, one usually addressed by power-washing those components to remove the ash. At times, however, the ash pluggage became bad enough that it reduced the units' ability to reach their maximum capacity. What that means is that instead of being able to generate, for example, 635 megawatts, the unit could generate only 625 megawatts. These limitations came and went over time, and most of the time, the ash pluggage did not limit the units at all. When pluggage did limit generation, however, Ameren recorded the limitation in its records as a so-called "derating."

In industry parlance, and as it was recorded by Ameren, a "derating" reduces a unit's calculated *availability* to generate, a common industry statistic. Why? Because availability is the product of a simple formula: the unit's *available capacity* multiplied by its *available hours*. If, during a given hour (or week, or month, etc.), there is a derating occurring, the unit's available capacity is reduced, and thus its availability. It is still available during those hours, just at a lower capacity. By contrast, a forced outage — a different kind of failure — means the unit is not operating at all and so is totally unavailable during those hours.

In its “increased availability” theory, EPA’s emissions experts accounted for all of the deratings caused by the pluggage. Those experts took each and every derating and fed them into their emissions calculation (assigning an emissions amount to each, on a one-for-one basis). They then opined that Ameren should have expected emissions to increase by that amount.

But EPA also asserts an “increased capacity” theory. This is where the double-counting crept in. The increased capacity theory is based on the very same pluggage, in the exact same components (the economizer and air preheater) that EPA’s experts accounted for in their availability theory. In its increased capacity theory, however, EPA *describes* the effect of the pluggage using different words. Instead of saying that the pluggage caused a reduction in *availability*, EPA says that the pluggage caused a reduction in the units’ *capacity*. And both statements are true — because they are describing the same thing two different ways. The pluggage *did* cause reductions in the units’ *available capacity*, just as we described above. Because you calculate availability by multiplying available capacity by available hours, that means that availability was reduced too. But EPA’s experts had *already* accounted for every bit of that pluggage in their availability calculations. They cannot count the effect of the pluggage again in their capacity calculations. Call it whatever you want, its supposed impact on emissions can be counted only once.

EPA’s entire “increased capacity” theory is just a semantic game. Yet we anticipate EPA will dedicate large portions of the trial to this bogus issue. Ameren will raise challenges to this evidence when EPA seeks to introduce it; because of the double-counting issue, the Court should treat EPA’s evidence here with particular skepticism.

Dated: August 8, 2016

Respectfully submitted,

/s/ Matthew B. Mock

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CERTIFICATE OF SERVICE

I hereby certify that on August 8, 2016, I electronically filed the foregoing document with the Clerk of Court using the CM/ECF system, which will cause an electronic copy to be served on counsel of record.

/s/ Matthew B. Mock